

The Cause Behind the Leaks

It's Helpful to Face Reality When the Problem of a Leaky Building Crops Up

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A splendid example of profligacy (that means "reckless extravagance") is the annual spending of untold thousands of dollars for "waterproofing sealers" to correct and prevent leaking through stucco. Leaking is what the layman calls appearance of water somewhere inside a structure. Apartment buildings, condominiums, even subdivisions, have their tenants' associations. Some of these associations include as members certain divinely endowed oracles who know immediately the cause of a water problem.

"Yep, coming right through the stucco. Saw it with my own eyes!" Next step: Arrange with a "waterproofing expert" to coat the walls at a fancy price. The whole operation is an inevitable exercise in futility that won't be proved such until the next rainy season equal to the one that caused manifestation of the water problems to begin with. Perhaps a season or two of mild rainstorms gives the building owners a sense of security and rightness about their decision. But, lo, when the heavy rains and winds again prevail the sealer has ceased to perform.

When this happens, the most frenzied situations occur. Like "Let's have the stucco removed and replaced. The workmanship was shoddy." Or, more than likely, "Let's sue the contractor." Litigation is the last resort of

people who simply refuse to face reality.

The major cause of water entry problems in a building is defective or improperly installed flashing. Probably the worst offender is window flashing. Windows are (1) flashed improperly, or (2) not flashed at all. This comes about as a result of the builder or framing contractor being unacquainted with the proper procedure, or it results from lack of interest in and attention to such minor details. The determination of "minor" is the bugaboo.

But improper window flashing alone does not cause the water problem. Water has to reach the stucco assembly, running behind the stucco and in front of the building paper. Only after water has reached that minuscule area can it do its damage. That's where improper or absent window flashing permits water to appear inside the building.

On a recent complaint—about to enter litigation—spokesmen for the owners' association stated very specifically and positively that stucco was the problem; water was going right through it reaching the inside. One of the spokesmen flatly declared the stucco must come off. Several other comments of the same nature were expressed.

However, the symptoms failed to support any of the number of theories

expressed by these people, and the biggest difficulty experienced during the meeting was an effort to remain to listen to bizarre analyses. At the conclusion of the meeting, arrangements were made to demonstrate leaking—and not through the stucco.

On Monday, May 10, at about 1:30 in the afternoon, the building site was a veritable cemetery. So it was pretty much a do-it-yourself job. This has its advantages, however. At least the analyses of various and sundry non-knowers didn't have to be experienced again.

A long extension ladder was placed against a wall which showed several very significant cracks. The cracks had been "siliconized" making them much more serious looking than they really were. Next, a hose was carried to the top of the wall at the juncture of the roof assembly and the adjoining stucco. Water was turned on.

It wasn't exactly cricket, though, because a check of plans in the office of an architect who had been engaged to oversee some of the activity at the development showed a particularly vulnerable detail. This involved the roof sheathing—plywood—sloped to the edge of the building. Stucco had been installed to end just above the edge of the plywood roof sheathing. It was obvious that here was an invitation for water to come in. A welcome

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mat couldn't have been more appropriate.

Still Existed . . .

There were some other factors, too. Originally, there had been no gutters at the edge of the roof. Absence of soffits meant water collected around the perimeter of the buildings in the flower bed areas. Gutters had been installed afterward as a remedial measure. The troublesome detail still existed and no one had any idea how wide the flange on the gutters was as it was placed beneath the wood shingles.

The hose was turned on, and water was directed at the vulnerable area at the juncture of roof sheathing and stucco. If the theory was correct water would enter the area between stucco and building paper and would appear at the cracks which had been "siliconized". After about 20 minutes there was no apparent water appearance on the wall, a frustrating development running entirely contrary to experience.

Climbing down the ladder, it was a reflection "back to the drawing board". Just at that moment one of the owner association spokesmen exclaimed: "Look, water is coming through that crack!" Observation showed it was appearing at all the cracks that had been "siliconized", and even through fine hairline cracks that hadn't been caulked previously. This gives a feeling of elation at having proved a theory to be a fact.

The next building, occupied by a little old lady who had her own theories about how water was getting into her bedroom, having done so for the three years she lived there, was considered from the top of the wall as in the first one. Next door-separated by an inset area in the building-there had also been some water entry. Again, climbing the ladder, the hose was directed to the area beneath the shingles and above the gutter. In

about 10 minutes the occupant next door declared water was coming in. The little old lady's bedroom was still dry. There was no sign of water after perhaps an hour, although water was turned off only after about 15 minutes. Was this the moment of truth? Again, the theory is put to the test.

The final buildings, called 128, 129, and 130 of the development, were one story structures. The bedroom in one, at the front of the building, had been perennially wet even in moderate rainstorms. Again, the hose and ladder routine, this time directing water toward the juncture of the inset vertical wall area and the edge of the wood shingles. In less than five minutes, water had entered the bedroom area in the corner, and was visible on the carpeting.

Proved! Well, almost, because the building owned by the little old lady had not checked out appropriately. And that can be a real source of anxiety, frustration, and even despair. There's no feeling like wondering if you really know what you are doing.

Time to Examine . . .

About 4 P.M. it was quits, but arrangements were made to examine the unit owned by the little old lady who

knew why the leaks were occurring. The examination would be made from time to time in the next few hours.

At about 7 P.M. the good news arrived! The unit had been examined and it was discovered it was wet-the water had finally reached the area which had been exposed by removing wallboard and the association spokesman was just as elated as anyone. "You've proved your point", he side, "and we now know what to do." More beautiful words can never be heard.

This is the account of one of those actual cases which showed beyond any doubt that the stucco exteriors performed excellently; that defective or improperly installed or absent flashing contributed to the water problems that had been experienced. And the walls had been "waterproofed", too, at no little expense! The side effect reflection: Why does the plastering industry, for example, have to provide the expertise to identify a problem that isn't related in any way to stucco?

These instances are not rare. Many knowledgeable experienced people in the industry can make the same points as outlined here. But had more attention been devoted to flashing and the architectural details of the structures at the start of building, the problems would more than likely have never existed.

Where flashing of windows is not proper, further work should be halted until the proper conditions are provided. In this case the wall contractor could have faced prolonged and serious litigation—through no fault of his. A stitch in time saves nine, is a Ben Franklinism that applies particularly in construction.

Different Procedures . . .

To provide more insight for the industry, arrangements have been made with the Engineering Department, San Jose State University, to test eight

panels. These panels will be 12-feet long, 9-feet high, with a 4'0" by 6'0" window placed about 18-inches above the bottom plate. Different flashing procedures will be used on each panel. Panels will be racked to create cracks to allow water to go through the stucco membrane. Water will be applied to the face of the panels with a negative pressure on the back of the panels.

Different plaster mixes will be used on different panels. Detergent will be used in the mix applied to one of the panels to determine its effect on performance and its permeability compared to other mixes.

A major window manufacturer is cooperating in the effort, since they, too, want to determine how to cope with the problems that result from inappropriate flashing. Stucco will be three-coat work over woven wire stucco netting, and with metal lath on one of the panels. Regular Grade D building paper will be used on all panels. Flashing of windows will vary from no flashing to the best conceivable flashing. Records will be kept of each step, results, observations, time involved, water application, and all the other myriad of details to make tests yield the most they can yield.

San Jose State University's Dean of Engineering, Dr. Jay Pinso, states that not only will the engineering faculty be involved, but that engineering students will take part as practical so they "can get a chance to see what the real

world is like". Tests should be underway in the next few months and it is ardently hoped that some meaningful information will be collected. The project is under the direction of the writer with assistance from several key industry people including Jim Rose of Contracting Plasterers of Southern California, and Tom Geary of Genstar Cement. A number of major plastering contractors are also behind the effort.

Aside from those tests, the word to lathing and plastering contractors is clear. Most people are totally unacquainted with the characteristics of water in the wrong places. Where the exterior skin of a building is the major visual mass, it can be expected the plastering contractor runs a risk of being named as the person responsible whether it's true or not.

Finally, don't accept the analysis of someone involved in a building as to the reasons for problems if those "reasons" indicate to the analyzer it is your responsibility. Have the structure checked for sources of leaks by someone experienced in such investigations. Be sure to check their credentials, and their "batting average" on other similar problems. It's better to know that the person working on your behalf has the know-how than to find out later he doesn't. There are many people claiming to be "leak experts" and only in one context is this really true.